## AMENDMENTS TO THE CLAIMS

Claims 1-35. (Cancelled)

36. (Previously Presented) A microfluidic device for the detection of a target analyte in a fluid sample comprising:

a) a solid support member;

b) a sample handling module including a sample handling well formed in said support member to receive and store said sample;

c) a sample inlet port to said microfluidic device;

d) a first microchannel formed in said support member coupled to and extending between said sample handling well and said sample inlet port;

e) a detection well formed in said support member and a detection electrode positioned in said detection well, said detection electrode being provided with a self-assembled monolayer; and a binding ligand; and,

f) a second microchannel formed in said support member and extending between said sample handling well and said detection well for the flow of said fluid sample there between.

37. (Previously Presented) The device of claim 36, and a reagent positioned in said sample handling well.

38. (Previously Presented) The device of claim 37 wherein said reagent comprises a cell lysing agent.

39. (Currently Amended) The device of claim 36, and a filter adapted for the removal of cellular debris, said filter positioned ~~between~~ within said ~~sample handling well and said~~ second microchannel.

Claims 40-44. (Cancelled)

45. (Currently Amended) A device according to claim 36, and a reaction module ~~formed in said support member, wherein an additional microchannel connects the reaction module to said sample handling well and a further microchannel connects the reaction well to said detection well~~positioned in the second microchannel.

46. (Previously Presented) A device according to claim 45, and reagents for nucleic acid amplification positioned in said reaction module.

47 (Previously Presented) A device according to claim 45, and an electrical resistance heater positioned in said reaction module.

48. (Cancelled)

49. (Previously Presented) A device according to claim 36, and a means for inducing flow of a sample through said microfluidic device.

50. (Previously Presented) A device according to claim 49 wherein said means for inducing flow comprises a pump.

51. (Cancelled)

52. (Previously Presented) A device according to claim 36, further comprising a valve in said second microchannel.

53. (Previously Presented) A device according to claim 36 wherein said binding ligand is a nucleic acid.

54. (Previously Presented) A device according to claim 36, further comprising an electron transfer moiety positioned in the detection well.

55. (Previously Presented) A microfluidic device for the detection of a target analyte in a fluid sample comprising:

a) a solid support member;

b) a reaction module formed in said support member;

c) a sample inlet port to said microfluidic device;

d) a first microchannel formed in said support member coupled to and extending between said reaction module and said sample inlet port;

e) a detection well formed in said support member and a detection electrode positioned in said detection well, said detection electrode being provided with a self-assembled monolayer; and a binding ligand; and,

f) a second microchannel formed in said support member and extending between said reaction module and said detection well for the flow of said fluid sample there between.

56. (Previously Presented) A microfluidic device according to claim 55, further comprising an electron transfer moiety positioned in the detection well.